

(1846), 2nd edition, p. 12 (1863), nec *A. tibetensis*, Hodgs. J. A. S. B. 1843, xii. p. 409.

“‘*A. bobac*, Schreber’ (partim), Blyth, Cat. Mamm. Mus. As. Soc. p. 108 (1863), nec Schreber.

“‘*A. hemachalanus*, Hodgson,’ Jerdon, Mamm. India, p. 102 (1867); W. Blanf. J. A. S. B. 1875, xlv. pt. 2, p. 122.

“*A. hodgsoni*, W. Blanf., Scientific Results of the Second Yarkand Mission, Mammalia, p. 35, note.”

Prof. Mivart stated that on Tuesday 8th inst. the Secretary of the Botanical Society in the Regent's Park, Mr. W. Sowerby, F.L.S., had his attention called to some small animals living in the tank of the *Victoria-regia* house. On examination these animals had turned out to be Medusæ¹, which were thus found to be inhabitants of fresh water, a circumstance which Prof. Mivart believed to be unprecedented. These animals were subsequently found to become torpid, and fall to the bottom almost motionless, when the water had become as cool as 56° Fahr.; but upon the water becoming warmed up to 85° they became once more as active as ever, vigorously continuing the contractions of the umbrella. Mr. Sowerby had informed Prof. Mivart that they were rapidly reproducing young like themselves.

The following papers were read:—

1. On *Antechinomys* and its Allies.

By EDWARD R. ALSTON, Sec.L.S., F.Z.S., &c.

[Received May 29, 1880.]

(Plate XLV.)

In March last my friend Mr. J. W. Clark asked me to determine some spirit-specimens of Mammals belonging to the Museum of the University of Cambridge. The series included a collection of small Australian Marsupials, and among these was one which puzzled me not a little. Its long *Chæropus*-like limbs and bushy tail gave it the aspect of a member of the family Peramelidæ, yet it evidently belonged to the Dasyuridæ. It was only when Mr. Gerrard showed me the type of *Phascologale lanigera*, Gould², in the British Museum that I discovered its identity with that species; and I think that no one who compares the figure here given (Plate XLV.) with Mr. Gould's illustration will be surprised that I failed to recognize the latter.

In a paper communicated to this Society by Mr. G. Krefft,

¹ Since named by Mr. E. Ray Lankester *Craspedacusta sowerbii*, 'Nature,' vol. xxii. p. 147 (June 17th, 1880), and by Prof. Allman *Limnocoedium victoria*, Proc. Linn. Soc. [Zool.] vol. xv. p. 131.

² Mamm. Austr. i. pl. xxxiii. (1863, descr. orig.).



J. Smit lith.

Hanhart imp.

ANTECHINOMYS LANIGERA



C.M.Z.S., in 1866, he proposed that *Phascologale lanigera* should be made the type of a new genus, *Antechinomys*¹. The characters given by him are very brief, and, as the animal appears to be extremely rare in collections, I trust that the following detailed description of this remarkable form will be useful to any zoologist who may undertake the long-needed revision of the Marsupialia. For the opportunity of fully examining the structure of *Antechinomys*, and of comparing it with that of the allied genera *Phascologale*, *Antechinus*, and *Podabrus*, I am indebted to the kindness of Mr. Clark, Dr. Günther, and Professor Flower.

EXTERNAL CHARACTERS.

General form slender; head proportionally large, legs and tail greatly elongated. Head narrow, conical; muzzle produced and pointed; muffle broad, naked, with a slight median groove, but not cleft. Ears large, tapered, rounded at the tips, almost naked, except at the base and along the front edge, where they are sparsely haired; in the interior of conch near the base of the anterior margin is a curious free lobe, like the tragus of a Bat, about 0.15 inch in length, and the same in breadth. This lobe is also found in the allied genera. No perceptible pouch.

Fore limbs very long and slender, the forearm being about double the length of the upper arm, scantily clad with short white hairs; fore feet very small, with five digits, of which the third is the longest, the second and fourth subequal, and the first the shortest, each armed with a small but well-developed claw; soles with three large pads, covered with minute tubercles. In *Podabrus* the fore limbs are very much shorter, and the soles are similar, but have five tuberculated callosities instead of three. In *Phascologale* and *Antechinus*, on the other hand, the fore feet are comparatively broad, and the soles are naked, with elongated transversely striated pads.

Hind limbs nearly as slender and still more elongated, the foot longer than the forearm and nearly as long as the tibia; the muscles of the leg are only fleshy in their upper moiety, leaving the lower half slender, like that of a bird; the latter portion and the whole of the foot, except the base of the toes, rather densely clothed with small whitish hairs. Toes four in number, the first being absent, the third and fourth equal and the longest, the second and fifth subequal; claws similar to those of the fore foot; on the sole at the base of the toes is a large crescentic callosity covered with small tubercles. In all the other genera there are five toes, the first being a short nailless thumb, which is placed furthest back in *Podabrus*, but still extends almost to the base of the other digits. In that genus the hind foot is almost as slender as in *Antechinomys*, although much less elongated; the metatarsus is more or less hairy behind, and the callosity of the sole is similar, except that it is divided into three; the tarsus is almost naked behind. *Phascologale* and *Antechinus* have the hind foot very broad and short, with naked soles and transversely striated pads, similar to those of the fore feet.

¹ P. Z. S. 1866, p. 434.

Tail longer than the head and body; for more than half its length clad with very short adpressed white and brown hairs; these then gradually but rapidly increase in length, and the terminal third of the tail is covered with hairs of about a quarter of an inch in length. *Phascologale* has a similar tail; but in *Antechinus* and *Podabrus* this member is shorter than the head and body, and is clothed throughout with short adpressed hair.

Measurements of the specimen described (a female) in spirits:—

	inches.
Length of head and body	3·25
„ tail (without hairs)	4·60
From muzzle to eye	·50
„ „ to anterior margin of ear-conch	·95
Length of ear-conch	·65
Breadth of „	·45
Length of forearm	·95
„ fore foot (without claws)	·26
„ longest finger.....	·10
„ lower leg	1·30
„ hind foot (without claws).....	1·15
„ longest hind toe (without claws)	·20

Colour of the upper parts brownish mouse-grey, darker on the occiput, paler on the face and upper part of the limbs; the hairs dusky at their bases, then yellowish white, and mostly tipped with dark brown; round the eye is an ill-defined dark brown ring, produced in front. All the lower parts, the fore limbs from the elbow, and hind limbs from the middle of the tibia pure white; the belly with a large almost naked space, not involved, and showing only traces of the mamnæ. The short adpressed hairs of the basilar part of the tail are mixed white and brown, the former largely preponderating; the longer hairs towards the end rich dark reddish brown.

SKELETON.

The *skull* of *Antechinomys* presents no marked distinction from that of the allied genera, which agree, as Mr. Waterhouse has remarked¹, in the large size of the brain-case and foramen magnum, and in the feebleness of the muscular ridges, when contrasted with *Dasyurus* and *Thylacinus*. It is, however, comparatively narrow and elongated, and the mandible is very slender, with a high coronoid process.

The *vertebræ* number:—cerv. 7, dors. 13, lumb. 7, sac. 3, caud. 25, a formula in which its allies agree, save in the tail. The lumbar vertebræ have the spinous processes better developed than in *Podabrus*, although comparatively much smaller than in *Phascologale* and *Antechinus*, while their metapophyses and transverse processes are more feeble than in any of the other genera. The caudal vertebræ are very long and slender, especially towards the extremity of the tail.

¹ Nat. Hist. Mamm. i. p. 403.

In the *fore limb* (fig. 1) the scapula has the usual characters of the group, the spine being boldly deflected over the postscapular fossa. The humerus, which has the usual supracondylar foramen, is almost straight, slender and simple, with hardly any muscular impressions; that of *Podabrus* is quite similar, but in *Phascologale* and *Antechinus* the bone is curved, and the deltoid and supinator ridges are very prominent. The greatly elongated radius is straighter in *Antechinomys* than in the allied forms, and consequently is closely applied to the ulna for the greater part of its length, although remaining perfectly free. The bones of the manus are small and delicate.

Fig. 1.

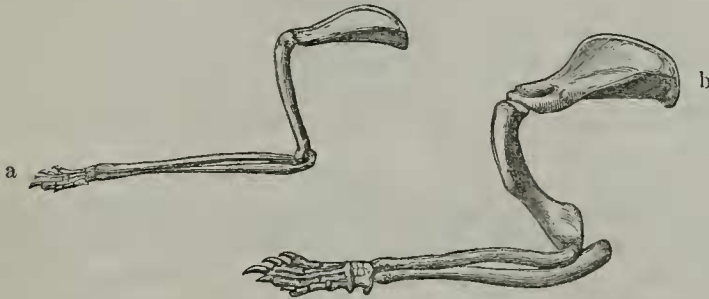
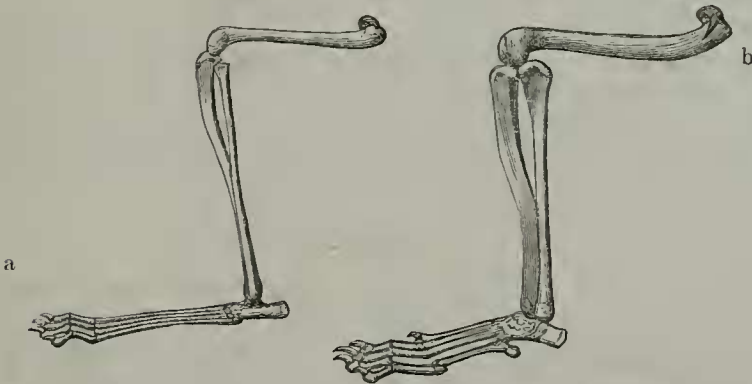
Bones of fore limb of *Antechinomys* (a) and *Antechinus* (b).

Fig. 2.

Bones of hind limb of *Antechinomys* (a) and *Antechinus* (b).

In the *hind limb* (fig. 2) the femur is even more slender than in *Podabrus*, and the lesser trochanter is less developed. The tibia and fibula are elongated; the latter is very slender, the former comparatively stout, and so little curved that it and the fibula, although quite free, are closely applied throughout their lower half; in the other forms these bones are only in contact near their lower extremities. The calcaneum is considerably produced behind, forming a very prominent *tuber calcis*. Only four metatarsals are present (the first being wanting), which are very slender and greatly elongated,

the tarso-metatarsus considerably exceeding the femur in length; in *Phascologale* and *Antechinus* it is only one half, and in *Podabrus* about two thirds as long as the femur. The phalanges of the four digits are short and rather delicate.

MUSCLES.

In its myology *Antechinomys* does not differ strikingly from its allies, save that the muscles of the lumbar region are more largely developed, especially the ilio-spinal, quadratus lumborum, and psoas magnus. In the limbs the muscles of the lower arm and leg have only a very short fleshy portion, the tendons forming considerably more than half their whole length. It is this that gives the peculiar bird-like look to the forearm and metatarsus of the animal, strongly contrasting with the stout short limbs of *Phascologale* and *Antechinus*, and even with the more delicate structure of *Podabrus*. In the hind foot the best developed muscles are the extensor communis and flexor brevis digitorum; the extensor and flexor pollicis are of course absent.

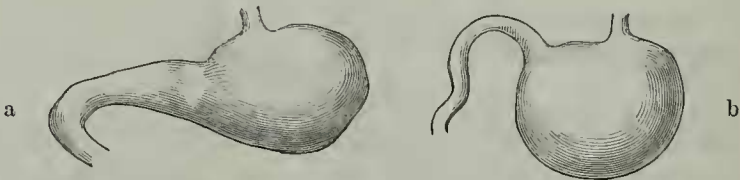
TEETH.

In dentition I cannot find that *Antechinomys* differs in any appreciable degree from *Podabrus*, or, indeed, from some species of *Antechinus*. The middle upper incisors are curved rather inwards than forwards, and the canines are nearly equal in size to the largest (third) premolars.

VISCERA.

The tongue in *Antechinomys* is long and narrow; the front part marked with transverse furrows, corresponding to the palatal ridges. It is covered with fine filiform papillæ, mixed with a few fungiform; the three circumvallate papillæ are placed in a triangle, and are large, pointed, and directed backwards. In the other forms the tongue is similar, but I was unable to detect the transverse furrows in the specimen of *Phascologale penicillata* examined.

Fig. 3.

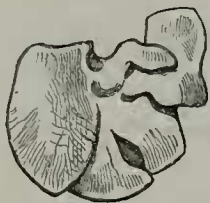


Stomachs of *Antechinomys* (b) and *Antechinus* (a).

The stomach (fig. 3) is proportionally large, and is almost globular in shape, with the cardiac and pyloric openings near one another; the epithelial lining is smooth and uniform, with a few slight longitudinal puckers. In *Podabrus* the stomach is of the same form; but in *Phascologale* and *Antechinus* it is very different, being transversely elongated, with a considerably produced fundus, and the pyloric opening is placed at the right extremity.

The *intestine* is perfectly simple and is 6·80 inches long, or little more than twice the length of the animal; I find a similar proportion in *Podabrus macrourus*; while in *Phascologale penicillata* the intestine is less than twice, and in *Antechinus swainsoni* more than three times the animal's length. Possibly the various species may differ in this respect.

Fig. 4.

Liver of *Antechinomys*.

The *liver* (fig. 4) resembles that of its allies, the right lateral lobe being unfissured, while the left is deeply cleft. A gall-bladder is present and the caudate lobe is well developed.

CONCLUSIONS.

Before considering the results of the above comparisons, it will be well to glance at the literary history of the present group.

In 1827 Temminck established the genus *Phascogale*¹ (more correctly written *Phascologale*), the type being the *Didelphys penicillatus* of Shaw. *Antechinus* was founded by MacLeay on a drawing and incorrect description of an animal which he at first believed to be an Insectivore²; but when he obtained a skeleton, he was doubtful of its distinction from *Phascologale*³. It was only adopted by Mr. Waterhouse as a "section" of the latter genus, including the species which have the tail covered throughout with short hair⁴; but it has been generally accepted, and further characters have been pointed by Mr. Krefft⁵. *Podabrus* appears to have been first used by Mr. Gould for the slender-footed *Phascologale crassicaudatus*, but without being characterized⁶. Mr. Waterhouse did not recognize it even as a "section;" and Mr. Krefft only accepts it with the proviso that he "cannot ascertain the true characters beyond what Mr. Waterhouse tells us, that it comprises the *Phascogalæ* with slender feet." He adds, however, some characters of his own, one being "Canines small, seldom exceeding the largest premolar in size;" but this is a point in which there is considerable variation in the species of both *Antechinus* and *Podabrus*. At the same time, as already stated, Mr. Krefft proposed the name *Antechinomys* for the *Phascologale lanigera* of

¹ Mon. de Mamm. i. p. 56.

³ *Tom. cit.* p. 338.

⁵ P. Z. S. 1866, p. 432.

² Ann. & Mag. Nat. Hist. viii. (1842) p. 242.

⁴ Nat. Hist. Mamm. i. p. 410.

⁶ Mamm. Austr. i. pl. xlvii. (1845).